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center. Much fine detail is shown both in the ring and in the relatively bright, nearly straight ray of nebulosity to the southwest, which was discovered by Barnard and confirmed photographically by Pease.

Still another photograph of this object was taken on December 13th, on a Seed 23 plate and with very fine seeing; the exposure time was 4½ hours. A careful comparison of the negative fails to show with certainty any change in either the form or size of the ring.

The accompanying illustration is enlarged 11 diameters from the original negative; the scale, therefore, is about $2''.5$ to the millimeter.

G. W. Ritchey.

Note on the Distribution of Stars in the Globular Cluster Messier 5

In the earlier study of galactic planes in globular clusters no plates of long exposure were available for the bright northern system Messier 5 (N. G. C. 5904), but Mr. Pease has now secured and kindly placed at our disposal a photograph having an exposure of $2^h\ 40^m$ at the principal focus of the 60-inch reflector. More than 15,000 stars appear on the plate within a radius of 15′ from the nucleus.

In order to study the distribution with respect to direction from the center, a system of sectors and concentric rings, photographed on glass, was superposed over the negative of the cluster; the stars were twice counted for all of the small divisions, except those in the central burned-out area, which extends over 12.6 square minutes of arc. The total number of stars in each 30° sector, lying in the annulus bounded by the circles of 3′ and 15′ radius, are given, with position angle as argument, in the following tabulation:

Position Angle	15°	45°	75°	105°	135°	165°
Number of Stars	924	1016	972	861	693	783
Position Angle	195°	225°	255°	285°	315°	345°
Number of Stars	870	978	1037	955	907	952

Combining opposite sectors to eliminate possible error of centering we get the following means, which show conspicuously an elongation with major axis in position angle 55°:

Position Angle	15°	45°	75°	105°	135°	165°
Number of Stars	897	997	1004	908	800	868

Other results derived from the study may be summarized as follows: 1. The density of stars in the direction 55°, and in the opposite direction as well, exceeds the density in the intermediate direction 145°, by almost 50 per cent. 2. The two nearly equal maxima in the frequency curve are separated by distinctly unequal minima, showing a divergence from elliptical symmetry that is much too pronounced to be accounted for by uncertainty of centering. In the mean, the excess of the maxima over the minima is about 25 per cent. 3. In this conspicuous one-sidedness Messier 5 is apparently intermediate between Messier 3, and the clusters in which the star counts indicate either fairly symmetrical elongation or circularity (*Mt. Wilson Contr.*, No. 129). Strömgren has also found Messier 5 and Messier 3 very similar to each other but different from other globular clusters in the relation of average star density to distance from center. Possibly the asymmetry and the abnormal density laws are closely related.

4. The elongation and asymmetry of Messier 5 appears at various distances from the center and for stars above and below the 16th magnitude; but in the densest regions the occultation of the small faint images by the much larger images of the brighter stars tends to counteract the measured effect.

5. Counts of stars on a second plate of short exposure verify in practically all essentials the results outlined above. A shift of the adopted center by $0'.1$ toward position angle 325°, an allowable operation for the second plate at least, removes the measured asymmetry for the shorter exposure without affecting the percentage elongation; but a similar shift for the first plate affects neither the elongation nor one-sidedness appreciably. It appears that the center may be different for the bright nuclear stars and for the cluster as a whole—a phenomenon already suspected by Plummer on the basis of Bailey's counts and discussion of N. G. C. 6266, a third globular cluster that is distinctly asymmetrical, even in the arrangement of its brightest stars.

HARLOW SHAPLEY
HELEN DAVIS

Mount Wilson Solar Observatory,
March 14, 1918.